

# BF in 4D

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$M$  - a 4D manifold

The action  $\exp(-\lambda \int_M \text{tr}(B \wedge F))$

where  $F = F_A$  is the curvature of a connection  $A$  and  $B$  is a Lie-valued 2-form.

The first (classical) observable we want to consider is

$$\text{Tr}_\rho \exp\left(\int_\Sigma \text{Hol}(A, \gamma_{y,x}) B(y) \text{Hol}(A, \gamma_{z,y})\right), \quad y \in \Sigma.$$

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